DERWENT-ACC-NO: 1996-318103
DERWENT-WEEK: 199632

TITLE: Pneumatic radial tyre, for passenger cars improved in steering
stability and ride comfort - has belt layer with main belt layer made of 2 belt
plies with cords crossing each other, etc.

PATENT-ASSIGNEE: BRIDGESTONE CORP[BRID]

PRIORITY-DATA: 1994JP-0287759 (November 22, 1994)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 08142607 A	June 4, 1996	N/A	004	B60C 009/20

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
JP 08142607A	N/A	1994JP-0287759	November 22, 1994

INT-CL (IPC): B60C009/20

ABSTRACTED-PUB-NO: JP 08142607A
BASIC-ABSTRACT: A pneumatic radial tyre for a passenger car or a light truck
has a toroidal carcass (5) and a belt layer (3) made of plural belt plies with
cords having definite inclination angle to tyre's circumferential direction.
The improvement is that the belt layer (3) has a main belt layer (4) made of
two belt plies with cords crossing each other, and denoting by Me and Mc in the
100 elongation modulus of the coating rubber of the main belt (4) at both end
regions (6) and the central region (8), respectively, and by We and Wc the
corresp. widths, the ratio Me/Mc is larger than 1.3 and the ratio W2/(2We+Wc)

ranges from 0.1 to 0.35.

ADVANTAGE - Steering stability and ride comfort are improved, with an increased uniformity of the belt stiffness in the belt width direction.

CHOSEN-DRAWING: Dwg.1/1

TITLE-TERMS:
PNEUMATIC RADIAL TYRE PASSENGER CAR IMPROVE STEER STABILISED RIDE COMFORT BELT LAYER MAIN BELT LAYER MADE BELT PLY CORD CROSS

DERWENT-CLASS: A95 Q11

CPI-CODES: A12-T01B;

ENHANCED-POLYMER-INDEXING:
Polymer Index [1.1]
018 ; H0124*R
Polymer Index [1.2]
018 ; ND01 ; K9892 ; K9416 ; Q9999 Q9234 Q9212 ; Q9999 Q9256*R Q9212
; B9999 B4079 B3930 B3838 B3747 ; B9999 B4080 B3930 B3838 B3747
Polymer Index [1.3]
018 ; A999 A419 ; S9999 S1672

SECONDARY-ACC-NO:
CPI Secondary Accession Numbers: C1996-101150
Non-CPI Secondary Accession Numbers: N1996-267883

(19)日本国特許庁（ＪＰ）　(12)公開特許公報（A）　(11)特許出願公開番号

特開平8－142607

(43)公開日　平成８年(1996)６月４日

(51)Int.Cl.[6]	識別記号	庁内整理番号	ＦＩ	技術表示箇所
Ｂ６０Ｃ　9/20		Ｇ　7504－3Ｂ		

審査請求　未請求　請求項の数１　ＯＬ　（全　４　頁）

(21)出願番号　特願平6－287759

(22)出願日　平成６年(1994)11月22日

(71)出願人　000005278
株式会社ブリヂストン
東京都中央区京橋１丁目10番１号

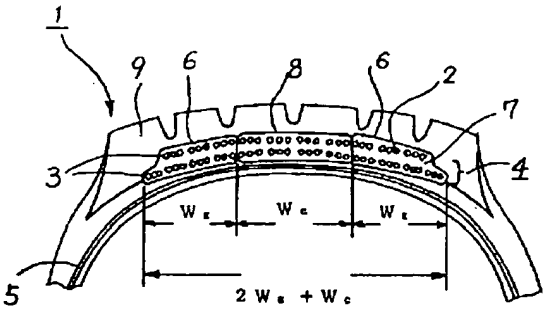
(72)発明者　柳沢　学
東京都小平市小川東町３－５－５－540

(54)【発明の名称】　空気入りラジアルタイヤ

(57)【要約】

【目的】　ベルト層の幅方向に亙るベルト剛性のアンバランスを是正して、タイヤの操縦性能と振動乗り心地性能とを改善する空気入りタイヤを提供する。

【構成】　乗用車など比較的小型の車両に装着される空気入りラジアルタイヤにおいて、ベルト総幅に対する比率として一定の範囲に規定されるベルト層の両端部におけるベルトコード被覆ゴムの１００％モジュラス値を、ベルト層中央部分の該モジュラス値より１．３倍以上に大きくすることによって、ベルト剛性のベルト幅方向分布を均一化して、操縦安定性能と振動乗り心地性能を向上させる。



1

【特許請求の範囲】

【請求項1】　円環体状に形成されたカーカス層の頭頂部に、複数の補強コードがその延在方向をタイヤの赤道面に対して一定の傾斜角度として並列されて被覆ゴム中に埋設されたベルト層が積層されたベルト構造を備えた空気入りラジアルタイヤであって、少なくとも2層のベルト層がそれぞれのコード方向を交錯させて積層された主ベルト層において、該主ベルト層の幅方向両端部の被覆ゴムの100%伸張時モジュラスをM_E とし、前記主ベルト層の中央部分の被覆ゴムの100%伸張時モジュラスをM_C とし、更に、前記両端部のベルト幅をW_E とし、前記中央部分のベルト幅をW_C とする時に、次式、

【数1】

$$M_E \geq 1.3 M_C$$

$$0.1 \leq \frac{W_E}{2W_E + W_C} \leq 0.35$$

の関係を満足することを特徴とする空気入りラジアルタイヤ。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、乗用車や小型トラックや小型バスなどに装着される空気入りラジアルタイヤの操縦性能及び振動乗り心地性能の改良に関する。

【0002】

【従来の技術】上記の車種に装着される空気入りラジアルタイヤでは、通常、2層または3層のスチールコードベルト層が積層されたベルト構造が採用されており、これらのベルト層のスチールコードは単に一種類の被覆ゴムで被覆されている。従って、ベルト層の全幅に亙って、被覆ゴムのモジュラスは同一とされていた。

【0003】

【発明が解決しようとする課題】この様な従来のタイヤに内圧を充填した場合に、この内圧によって生ずるタイヤ周方向の張力を主体となって分担するベルト層は、通常、タイヤ赤道面に対するコードの傾斜方向を交錯させて隣接する2層のベルト層から成る所謂交錯層とされている。そして、内圧充填時に該交錯層の幅方向各部のタイヤ周方向の伸びを有限要素法によって算出し、これより交錯層ベルトの幅方向各部の剛性（伸びにくさ）の分布を求めると、ベルトの幅方向中央部分の剛性の値が最*

2

*も高く、ベルトの両端部の剛性の値が最も低い山型の分布となることが従来知られている。即ち、従来のタイヤは、ベルト層の両端部に行く程ベルト剛性が中央部分に比較して低くなるというアンバランスな特性を有している。

【0004】この様な特性を持つ従来の空気入りラジアルタイヤでは、タイヤが車両に装着されて曲線路を走行する際に遠心力に対抗する路面からの摩擦力がタイヤのトレッド接地面に作用すると、剛性の低いベルト層の両端部が中央部分に比較して大きな変形を起こして、タイヤトレッドの接地面両端部での路面とトレッドゴムとの密着状態を不安定にさせる。このために、特に曲線路走行時のタイヤの操縦安定性が低下するという問題があった。

【0005】また、走行中に路面から各種の衝撃をうけた場合に、従来のタイヤでは、ベルト両端部での剛性が小さく、変形を起こし易いために、この両端部で路面からの衝撃が振動として励起増幅されてタイヤのサイドウオールに伝達され、更にサイドウオールに繋がるホイールを経て車両に伝達されて、車の乗り心地が悪化するという問題があった。

【0006】上記の事情に鑑みて、本発明の目的は、ベルト層の幅方向に亙るベルト剛性のアンバランスを是正して、タイヤの操縦性能と振動乗り心地性能とを改善する空気入りタイヤを提供することである。

【0007】

【課題を解決するための手段】上記の目的を達成するために、本発明に係る空気入りラジアルタイヤでは、特許請求項1に記載の如く、円環体状に形成されたカーカス層の頭頂部に、複数の補強コードがその延在方向をタイヤの赤道面に対して一定の傾斜角度として並列されて被覆ゴム中に埋設されたベルト層が積層されたベルト構造を備えた空気入りラジアルタイヤであって、少なくとも2層のベルト層がそれぞれのコード方向を交錯させて積層された主ベルト層において、該主ベルト層の幅方向両端部の被覆ゴムの100%伸張時モジュラスをM_E とし、前記主ベルト層の中央部分の被覆ゴムの100%伸張時モジュラスをM_C とし、更に、前記両端部のベルト幅をW_E とし、前記中央部分のベルト幅をW_C とする時に、次の式1

【0008】

【数2】

【式1】

$$M_E \geq 1.3 M_C \quad \cdots\cdots\cdots\cdots\cdots (1)$$

$$0.1 \leq \frac{W_E}{2W_E + W_C} \leq 0.35 \cdots\cdots (2)$$

の関係を満足することを特徴とするとしている。

【0009】

※【作用】本発明の空気入りラジアルタイヤではベルト層の両端部の被覆ゴムの100%伸張時のモジュラス値を

3

前記式1の（1）に示される如くベルト層の中央部分に対して1．3倍以上に大きく設定されるのでベルト層の両端部のベルト剛性が高くなり、ベルト層の幅方向に亙って、ベルト剛性の分布がほぼ均一になる。ここで、ベルト層の両端部の被覆ゴムの100%伸張時のモジュラス値がベルト層の中央部分に比較して1．3倍に満たない場合には、加硫後のタイヤ内各部位でのモジュラス値のバラツキやベルト補強コードの打込数（単位幅当たりのコード本数）のバラツキやタイヤ周方向各位置でのカーカス断面形状のバラツキなどの影響を受けて、タイヤ周方向の何処かの位置においてベルト層の両端部のベルト剛性が期待するベルト剛性に到達しない場合が起こる懸念がある。

【0010】また、本発明においては、ベルト剛性を高くするベルト層両端部の範囲が、前記式1の（2）に示される範囲とされている。各種形状のタイヤの各種のベルト構造について内圧充填時のベルト剛性のベルト幅方向分布を有限要素法などの応力歪み推定法によって確認検討した結果によって、ベルト端部の幅とベルト層の全幅との比W_E／（$2W_E+W_C$）の値が0．1に満たない場合には、ベルト層の全幅に対して、ベルト剛性を高くするベルト層両端部の範囲が狭くなり過ぎて、前記ベルト剛性のベルト幅方向分布が、中央部分のベルト剛性が依然として高いアンバランスな分布となる場合が発生する。又、W_E／（$2W_E+W_C$）の値が0．35を越える値となる場合は、ベルト剛性を高く設定する領域が広くなり過ぎて、中央部分の剛性が高い山形のアンバランスな分布が是正されない。

【0011】なお、ここで対象とするベルト層の全幅（$2W_E+W_C$）とは、タイヤ赤道面に対するコード角度を交錯させて積層された少なくとも一対のベルト層から成る交錯層（本発明では、これを主ベルト層と呼称する）において、ベルト層の幅が最も広いベルト層の幅とするのが好ましい。また、本発明に係る空気入りラジアルタイヤでは、複数の積層されたベルト層の内、少なくとも前記交錯層（即ち、主ベルト層）が、前記1式で表される関係に設定されることを必要とする。

4

*【0012】

【実施例】以下に実施例について説明する。本実施例では、タイヤサイズを185／65R14とし、図1に示す如く、ベルトコード2としてスチールコードを用い、そのコード角度をタイヤ1の赤道面に対して24度に設定されたベルト層3が2層それぞれのコード方向を交錯して積層されて成る主ベルト層としての交錯層4が一対カーカス層5の頭頂部に配置されている。そして、図1上、記号W_Eで表したベルト層の両端部6の前記スチールコード被覆ゴム7の100%伸張時のモジュラス（M_E）は、後記の表1に示す様に、記号W_Cで表したベルト層の中央部分8における該被覆ゴムの100%伸張時のモジュラス（M_C）に比較して高く設定されている。

【0013】なお、この様なベルト構造のタイヤを製造する方法の一例を説明する。数本のベルトコードを並列してこれを被覆ゴムで覆った比較的幅狭の帯状部材を、該被覆ゴムのモジュラス値を変更して2種類準備する。そして、この2種類の帯状部材を円環体上に形成されたカーカス層の頭頂部の両端部及び中央部分にそれぞれ巻つけてベルト層が形成される。そして更に、該ベルト層の上部に図1に示される様なトレッドゴム9を巻回貼着して成形された生タイヤを、加硫機に装填し常法によって加硫して製品タイヤとされる。尚、上記はあくまでも製法の一例であって他の製法（例えば、赤道面に対して傾斜するベルトコードがベルト層の一方の端部から他方の端部まで連続して延設されこれを端部と中央部分でモジュラス値を変更した別別のゴムシートで上下から被覆する、など。）によっても本発明に係るタイヤを製造することが出来る。

【0014】次に、この様にして製作した実施例のタイヤと、これと比較するために実施例と同一タイヤサイズ及び同一ベルト構造の比較例のタイヤとを、表1に示す如く、ベルト中央部分とベルト両端部での被覆ゴムのモジュラス値を種々変更して各種類試作し、タイヤの操縦安定性及び振動乗り心地性評価実車試験を実施した。

【0015】

*【表1】

	比1	比2	比3	比4	実1	実2
M_E M_C	30 32	36 30	50 35	44 30	45 32	55 42
W_E W_C	－ －	49 42	10 120	60 20	42 56	20 100
W_E／全幅	－	0.35	0.07	0.43	0.30	0.14
操縦安定性 振動乗心地	6 6	6 7	6 8	7 7	9 8	8 9

*比較例1は、ベルト被覆ゴムが一種類の従来タイヤである。
*全幅＝（$2W_E+W_C$）＝140mm.
*M_E、M_Cの数値の単位は、kgf／cm².
モジュラス値は、加硫タイヤから切り出した各々の被覆ゴムをJIS K6301 測定法によって測定した.
*W_E、W_Cの数値の単位は、mm.

【0016】なお、操縦安定性及び振動乗心地の実車評※50※価は、通常の乗用車の全輪に各試験タイヤを交互に装着

5

して、曲線路及び凹凸路を含むテストコースを走行させて、３名の運転手がフィーリングによって評価し、１０点満点で評点を付けて行った。上表の値は、運転手３名の評点の平均値である。

【００１７】表１の操縦安定性及び振動乗心地の評価結果に示される如く、実施例の各タイヤでは比較例のタイヤに比べ、特に曲線路を走行する際の操縦安定性が飛躍的に向上し、また路面から受ける振動が小さく振動乗り心地性能が著しく向上している。

【００１８】

【発明の評価】本発明に成る空気入りラジアルタイヤでは、ベルト層の両端部におけるベルトコード被覆ゴムの１００％伸張時のモジュラス値を、ベルト層の中央部分の該モジュラス値より効果的に大きくしているので、ベルト剛性のベルト層幅方向の分布が均一となって、操縦

6

安定性能や振動乗り心地性能を従来タイヤ対比著しく改善向上できる。

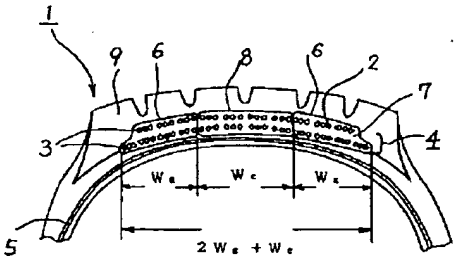
【図面の簡単な説明】

【図１】本発明に係る実施例のタイヤの踏面部の一部横断面図を示す。

【符号の説明】

1　タイヤ
2　ベルトコード
3　ベルト層
4　交錯層
5　カーカス層
6　両端部
7　被覆ゴム
8　中央部分
9　トレッドゴム

【図１】



* NOTICES *

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer.So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] It is the radial-ply tire containing air equipped with the belt structure where the laminating of the belt layer in which two or more reinforcement cords were arranged in parallel as a fixed degree of tilt angle to the equatorial plane of a tire in the extension direction, and were laid underground into covering rubber was carried out to the parietal region of the carcass layer formed in the shape of a torus. In the main belt layer to which the two-layer belt layer made each direction of a cord interwoven with each other, and the laminating was carried out at least It is ME about a modulus at the time of 100% extension of the covering rubber of the crosswise both ends of this main belt layer. It carries out and is MC about a modulus at the time of 100% extension of the covering rubber for a center section of the aforementioned main belt layer. It carries out and is WE about the belt width of face of the aforementioned both ends further. It carries out and is WC about the belt width of face for the aforementioned center section. It is the following formula when carrying out. [Equation 1]

$$M_E \geq 1.3\,M_C$$

$$0.1 \leqq \frac{W_E}{2W_E + W_C} \leqq 0.35$$

The radial-ply tire containing air characterized by satisfying ******.

[Translation done.]

* NOTICES *

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] this invention relates to improvement of the controllability ability of the radial-ply tire containing air with which a passenger car, a light truck, a microbus, etc. are equipped, and an oscillating degree-of-comfort performance.
[0002]
[Description of the Prior Art] The belt structure where the laminating of two-layer or the three-layer steel cord belt layer was carried out is usually adopted, and the steel cord of these belt layers is only covered with the radial-ply tire containing air with which the above-mentioned type of a car is equipped by one kind of covering rubber. Therefore, full [of a belt layer] was covered and the modulus of covering rubber was made the same.
[0003]
[Problem(s) to be Solved by the Invention] When such a conventional tire is filled up with internal pressure, let the belt layer which serves as a subject and shares the tension of a tire hoop direction produced with this internal pressure be the so-called mixture layer which consists of the two-layer belt layer which the inclination direction of the cord to a tire equatorial plane is made interwoven with each other, and usually adjoins. And if the elongation of the tire hoop direction of each part of the cross direction of this mixture layer is computed with a finite element method at the time of internal pressure restoration and it asks for the rigid (the difficulty of being extended) distribution of each part of the cross direction of a mixture layer belt from this, the rigid value for a crosswise center section of a belt is the highest, and the distribution of most a low mountain type [value / rigid / of the both ends of a belt] and the bird clapper are known conventionally. That is, the conventional tire has the imbalanced property that belt rigidity becomes low as compared with a part for a center section, so that it goes to the both ends of a belt layer.
[0004] With the conventional radial-ply tire containing air with such a property, if the frictional force from the road surface which opposes a centrifugal force acts on the tread ground plane of a tire in case vehicles are equipped with a tire and it runs a curvilinear way, the both ends of a rigid low belt layer will cause big deformation as compared with a part for a center section, and will make unstable the adhesion state of the road surface in the ground-plane both ends of a tire tread, and tread rubber. For this reason, there was a problem that the driving stability of the tire at the time of a curvilinear way run fell especially.
[0005] Moreover, when various kinds of shocks were got from a road surface during a run, with the conventional tire, the rigidity in belt both ends was small, since it was easy to cause deformation, excitation amplification of the shock from a road surface was carried out as vibration at these both ends, and it was transmitted to the sidewall of a tire, it was transmitted to vehicles through the wheel further connected with a sidewall, and there was a problem that the degree of comfort of a vehicle got worse.
[0006] It is offering the pneumatic tire which the purpose of this invention corrects the imbalance of belt rigidity covering the cross direction of a belt layer in view of the above-mentioned situation, and improves the controllability ability and the oscillating degree-of-comfort performance of a tire.
[0007]
[Means for Solving the Problem] In order to attain the above-mentioned purpose, with the radial-ply tire containing air concerning this invention To the parietal region of the carcass layer formed in the patent claim 1 in the shape of a torus like the publication It is the radial-ply tire containing air equipped with the belt structure where the laminating of the belt layer in which two or more reinforcement cords were arranged in parallel as a fixed degree of tilt angle to the equatorial plane of a tire in the extension direction, and were laid underground into covering rubber was carried out. In the main belt layer to which the two-layer belt layer made each direction of a cord interwoven with each other, and the laminating was carried out at least It is ME about a modulus at the time of 100% extension of the covering rubber of the crosswise both ends of this main belt layer. It carries out. It is MC about a modulus at the time of 100% extension of the covering rubber for a center section of the aforementioned main belt layer. It carries out and is WE about the belt width of face of the aforementioned both ends further. It carries out and is WC about the belt width of face for the aforementioned center section. When carrying out, it is the following formula 1 [0008].
[Equation 2]

【式１】

$$M_E \geqq 1.3 M_C \quad \cdots\cdots\cdots\cdots\cdots\cdots (1)$$

$$0.1 \leqq \frac{W_E}{2W_E + W_C} \leqq 0.35 \quad \cdots\cdots\cdots (2)$$

It is supposed that it will be characterized by satisfying ******.

[0009]

[Function] With the radial-ply tire containing air of this invention, since it is greatly set as 1.3 or more times to a part for the center section of a belt layer as the modulus value at the time of 100% extension of the covering rubber of the both ends of a belt layer is shown in (1) of the aforementioned formula 1, the belt rigidity of the both ends of a belt layer becomes high, it continues crosswise [of a belt layer] and the distribution of belt rigidity becomes homogeneity mostly. In not filling the modulus value at the time of 100% extension of the covering rubber of the both ends of a belt layer 1.3 times as compared with a part for the center section of a belt layer, here It is influenced of the variation in the modulus value in each part grade of the inside of a tire after vulcanization, the variation of the number of placing of a belt reinforcement cord (cord number per unit width of face), the variation of the carcass cross-section configuration in tire hoop-direction each position, etc. There is concern to which the case where the belt rigidity which the belt rigidity of the both ends of a belt layer expects in the position of somewhere in tire hoop directions is not reached happens.

[0010] Moreover, let the range of the belt layer both ends which make belt rigidity high be the range shown in (2) of the aforementioned formula 1 in this invention. By the result which carried out check examination of the belt cross direction distribution of belt rigidity at the time of internal pressure restoration by the stress distortion presuming methods, such as a finite element method, about various kinds of belt structures of the tire of various configurations the ratio of a belt layer the width of face of a belt edge, and full, when the value of WE/(2WE+WC) does not fulfill 0.1 The case where the range of the belt layer both ends which make belt rigidity high becomes narrow too much to full [of a belt layer], and the belt cross direction distribution of the aforementioned belt rigidity turns into an imbalanced distribution with the still high belt rigidity for a center section occurs. Moreover, when the value of WE/(2WE+WC) turns into a value exceeding 0.35, the field which sets up belt rigidity highly becomes large too much, and the imbalanced distribution of Yamagata where the rigidity for a center section is high is not corrected.

[0011] In addition, as for full [of the target belt layer] (2WE+WC), in the mixture layer (in this invention, this is called the main belt layer) by which the cord angle to a tire equatorial plane was made interwoven with each other, and the laminating was carried out and which consists of the belt layer of a couple at least, it is desirable that the width of face of a belt layer considers as the width of face of the largest belt layer here. Moreover, with the radial-ply tire containing air concerning this invention, the aforementioned mixture layer (namely, the main belt layer) needs at least to be set as the relation expressed by the one aforementioned formula among two or more belt layers by which the laminating was carried out.

[0012]

[Example] An example is explained below. In this example, tire size is set to 185 / 65R14, and as shown in drawing 1 , the mixture layer 4 as a main belt layer of which it is each other interwoven with, and the laminating of the belt layer 3 set as 24 degrees to the equatorial plane of a tire 1 in the cord angle is carried out, and it consists each two-layer direction of a cord is arranged at the parietal region of the couple carcass layer 5, using a steel cord as a belt 2. And the drawing 1 top and Sign WE The modulus (ME) at the time of 100% extension of the aforementioned steel cord covering rubber 7 of the both ends 6 of a belt layer which expressed is Sign WC as shown in the after-mentioned table 1. As compared with the modulus (MC) at the time of 100% extension of this covering rubber in a part for the expressed center section 8 of a belt layer, it is set up highly.

[0013] In addition, an example of a method which manufactures the tire of such belt structure is explained. The modulus value of this covering rubber is changed and two kinds of comparatively narrow band-like members which arranged several belts in parallel and covered this with covering rubber are prepared. And a ******** belt layer is formed in a part for the both ends of the parietal region of the carcass layer formed on the torus, and a center section in two kinds of this band-like member, respectively. And a vulcanizer is loaded with the raw tire fabricated by carrying out winding attachment of the tread rubber 9 as shown in the upper part of this belt layer at drawing 1 further, it is vulcanized by the conventional method, and it considers as a product tire. In addition, the above is an example of a process to the last, and can manufacture the tire concerning this invention by other processes (for example, the belt which inclines to an equatorial plane is continuously installed from one edge of a belt layer to the other-end section, and this is covered with an edge and the separate rubber sheet which changed the modulus value by part for a center section from the upper and lower sides.).

[0014] Next, in order to compare with the tire of the example which made this appearance and was manufactured, and this, as the tire of the example of comparison of the same tire size as an example and the same belt structure was shown in Table 1, various modulus values of the covering rubber in a part for a belt center section and belt both ends were changed, various kind trial productions were carried out, and the driving stability of a tire and the oscillating degree-of-comfort nature evaluation real vehicle examination were carried out.

[0015]

[Table 1]

	比1	比2	比3	比4	実1	実2
M_E M_C	30 32	36 30	50 35	44 30	45 32	55 42
W_E W_C	－ －	49 42	10 120	60 20	42 56	20 100
W_E／全幅	－	0.35	0.07	0.43	0.30	0.14
操縦安定性 振動乗心地	6 6	6 7	6 8	7 7	9 8	8 9

＊比較例1は、ベルト被覆ゴムが一種類の従来タイヤである。
＊全幅＝（2W_E＋W_C）＝140mm。
＊M_E、M_Cの数値の単位は、kgf／cm^2。
モジュラス値は、加硫タイヤから切り出した各々の被覆ゴムをJIS K6301 測定法によって測定した。
＊W_E、W_Cの数値の単位は、mm。

[0016] In addition, real vehicle evaluation of driving stability and oscillating riding comfortability equips all the rings of the usual passenger car with each examination tire by turns, and made it run a test course including a curvilinear way and a concavo-convex way, and three drivers evaluated it by the feeling and performed it by attaching a score by ten-point full marks. The value of upper ** is the average of three drivers' score.

[0017] As shown in the driving stability of Table 1, and the evaluation result of oscillating riding comfortability, with each tire of an example, vibration which the driving stability at the time of running especially a curvilinear way improves by leaps and bounds compared with the tire of the example of comparison, and is received from a road surface is small, and the oscillating degree-of-comfort performance is improving remarkably.

[0018]

[Evaluation of invention] since the modulus value at the time of 100% extension of the belt covering rubber in the both ends of a belt layer is effectively enlarged from this modulus value for a center section of a belt layer with the radial-ply tire containing air which grows into this invention -- the distribution of the belt layer cross direction of belt rigidity is uniform -- becoming -- driving stability ability and an oscillating degree-of-comfort performance -- the former -- tire contrast -- the improvement in an improvement can be carried out remarkably

---

[Translation done.]

* NOTICES *

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] a part of tread section of the tire of the example concerning this invention -- a cross-sectional view is shown
[Description of Notations]
1 Tire
2 Belt
3 Belt Layer
4 Mixture Layer
5 Carcass Layer
6 Both Ends
7 Covering Rubber
8 A Part for Center Section
9 Tread Rubber

[Translation done.]